Engineering Fracture Mechanics

List of Contents and Author Index
Volume 57, 1997

PERGAMON

ENGINEERING FRACTURE MECHANICS

EDITORS

Professor R. H. Dodds
Department of Civil Engineering
University of Illinois
2129 Newmark Laboratory
205 North Mathews Avenue
Urbana, IL 61801-2397, U.S.A.
Fax: (1) 217 333 9464
E-mail: r-dodds@uiuc.edu

Professor K.-H. Schwalbe
GKSS
Institut für Werkstofforschung
Max-Planck Strasse
D-21502 Geesthacht
Germany
Fax: (49) 4152 87 2534
E-mail: schwalbe@gkss.de

Editorial Advisory Board

R. Ainsworth
Nuclear Electric Ltd, Gloucester, U.K.
W. C. Carpenter
University of South Florida, Tampa, U.S.A.
G. Chell
Southwest Research Institute, San Antonio, U.S.A.
B. Cotterell
National University of Singapore, Singapore
M. Elices
Polytechnic University, Madrid, Spain
H. A. Ernst
Center for Industrial Research, Buenos Aires, Argentina
G. Gabetta
Eniricerche, San Donato Milanese, Italy
R. P. Gangloff
University of Virginia, Charlottesville, U.S.A.
G. Glinka
University of Waterloo, Canada
A. R. Ingraffea
Cornell University, Ithaca, U.S.A.
J. A. Joyce
US Navy Academy, Annapolis, U.S.A.
J. D. Landes
University of Tennessee, Knoxville, U.S.A.
Y.-W. Mai
The University of Sydney, Australia
J. C. Newman
NASA Langley Research Center, Hampton, U.S.A.
F. Nilsson
Royal Institute of Technology, Stockholm, Sweden
D. M. Parks
Massachusetts Institute of Technology, Cambridge, U.S.A.
S. T. Rolfe
University of Kansas, Lawrence, U.S.A.
A. Saxena
Georgia Institute of Technology, Atlanta, U.S.A.
H. Sehitoglu
University of Illinois, Urbana, U.S.A.
C. Fong Shih
National University of Singapore, Singapore
Zhigang Suo
Princeton University, New Jersey, U.S.A.
C. Thaulow
The Norwegian University for Science and Technology, Trondheim, Norway
M. Toyoda
Osaka University, Japan
K. Wallin
VTT Manufacturing Technology, Espoo, Finland
T. C. Wang
Chinese Academy of Sciences, Beijing, P.R. China
S. Webster
British Steel Technical, Rotherham, U.K.
J. G. Williams
Imperial College of Science and Technology, London, U.K.

Honorary Editors

G. R. Irwin
University of Maryland, College Park, U.S.A.
P. C. Paris
Washington University, St Louis, U.S.A.

Aims and Scope

Engineering Fracture Mechanics is a journal designed to be of broad interest and use to both researchers and practitioners of fracture mechanics in academic, industrial and government organizations. Contributions are welcome which address the fracture behavior of conventional engineering material systems as well as newly emerging material systems, for example, those employed in electronic components. Contributions on developments in the areas of mechanics and materials science strongly related to fracture mechanics are also welcome. Papers on fatigue are welcome if they treat the fatigue process using the methods of fracture mechanics. The Editors especially solicit contributions which synthesize experimental and theoretical–computational studies yielding results with direct engineering significance. Papers of an abstract mathematical nature, those emphasizing empirical correlations and those describing unanalyzed experimental data are not normally published.

List of Contents

NUMBER 1

D. M. Li and **A. Bakker**	1	Fracture toughness evaluation using circumferentially-cracked cylindrical bar specimens
Xin Wang and **S. B. Lambert**	13	Stress intensity factors and weight functions for high aspect ratio semi-elliptical surface cracks in finite-thickness plates
J. T. Gliniak, D. G. Harlow and **T. J. Delph**	25	A probabilistic model for the growth of creep cracks
J. Grison and **L. Remy**	41	Fatigue failure probability in a powder metallurgy Ni-base superalloy
H. L. J. Pang and **C. W. Seetoh**	57	A compact mixed mode (CMM) fracture specimen for adhesive bonded joints
L. Banks-Sills and **I. Dunye**	67	A note on the effect of plastic strain on fracture toughness
Yi Zhi-jian, Wang Shi-jie and **Wang Xiang-jian**	75	Precise solutions of elastic–plastic crack line fields for cracked plate loaded by antiplane point forces
P. K. Liaw, C. Y. Yang, S. S. Palusamy and **W. Ren**	85	Fatigue crack initiation and propagation behavior of pressure vessel steels
P. K. Liaw, A. Saxena, and **J. Schaefer**	105	Creep crack growth behavior of steam pipe steels: effects of inclusion content and primary creep
	131	Calendar

NUMBERS 2/3

Statistical Fracture Mechanics, Volume 1

	133	Preface
A. S. Balankin	135	Physics of fracture and mechanics of self-affine cracks
E. Van der Giessen, P. R. Onck and **M. W. D. Van der Burg**	205	Some effects of random microstructural variations on creep rupture
D. Krajcinovic	227	Effective material properties in the limit of large defect concentration
I. J. Beyerlein and **S. Leigh Phoenix**	241	Statistics of fracture for an elastic notched composite lamina containing Weibull fibers—Part I. Features from Monte-Carlo simulation

I. J. Beyerlein and **S. Leigh Phoenix**	267	Statistics of fracture for an elastic notched composite lamina containing Weibull fibers—Part II. Probability models of crack growth
B. Chiaia, A. Vervuurt and **J. G. M. Van Mier**	301	Lattice model evaluation of progressive failure in disordered particle composites
E. Schlangen and **E. J. Garboczi**	319	Fracture simulations of concrete using lattice models: computational aspects
	333	Calendar

NUMBER 4

Yuexing Dong, Zongmin Wang and **Bo Wang**	335	On the computation of stress intensity factors for interfacial cracks using quarter-point boundary elements
Z. H. Jin and **R. C. Batra**	343	A crack at the interface between a Kane–Mindlin plate and a rigid substrate
W. Becker	355	Closed-form modeling of the unloaded mode I Dugdale crack
T. Fett	365	A Green's function for T-stresses in an edge-cracked rectangular plate
B. S. Henry and **A. R. Luxmoore**	375	The stress triaxiality constraint and the Q-value as a ductile fracture parameter
J. Toribio	391	A fracture criterion for high-strength steel notched bars
D. Radaj	405	Fatigue notch factor of gaps in welded joints reconsidered
W.-J. He, Y. Lin and **H.-J. Ding**	409	A three-dimensional formula for determining stress intensity factors in finite element analysis of cracked bodies
M. L. Dunn, W. Suwito and **S. Cunningham**	417	Stress intensities at notch singularities
J. A. Joyce and **R. E. Link**	431	Application of two parameter elastic–plastic fracture mechanics to analysis of structures
Hong-Liang Pan and **Pei-ning Li**	447	Experimental validation studies of a procedure for treating secondary stresses
		Discussion
P. R. Marur	455	Investigation of loading rate and plate thickness effects on dynamic fracture toughness of PMMA

Discussion Response

H. Wada, M. Seika, T. C. Kennedy, C. A. Calder and K. Murase — 459 Investigation of loading rate and plate thickness effects in dynamic fracture toughness of PMMA

461 Calendar

NUMBER 5

K. Yagi, M. Tabuchi, K. Kubo, J. P. Kim and Y. H. Huh — 463 The influence of fracture mechanisms on the creep crack growth behavior of 316 stainless steel

J. Z. Liu and X. R. Wu — 475 Study on fatigue crack closure behavior for various cracked geometries

D. P. Boothman, M. M. K. Lee and A. R. Luxmoore — 493 A shallow crack assessment scheme for generalised material behaviour in bending

J. J. Denney and S. Mall — 507 Characterization of disbond effects on fatigue crack growth behavior in aluminum plate with bonded composite patch

Y. N. Lenets — 527 Compression fatigue crack growth behavior of metallic alloys: effect of environment

J. Červenka and V. E. Saouma — 541 Numerical evaluation of 3-D SIF for arbitrary finite element meshes

N. P. Andrianopoulos, S. K. Kourkoulis and S. Saragas — 565 COD measurements and optimum exploitation of metal matrix composites for aerospace applications

Technical Notes

G. B. Sinclair, G. Meda and K. Gálik — 577 Stress intensity factors for side-by-side edge cracks under bending

T. Fett — 583 Disappearing first derivative of weight functions

Discussion Response

C. P. Spyropoulos — 589 Some remarks on the Det.-criterion and caustics

591 Calendar

NUMBER 6

Yunping Xi and Z. P. Bazănt — 593 Random growth of crack with *R*-curve: Markov process model

M. L. Dunn, W. Suwito and B. Hunter — 609 Stress intensity factors for cracked I-beams

Zheng Xiulin and **Wang Rong**	617	On the corrosion fatigue crack initiation model and expression of metallic notched elements
L. L. Mishnaevsky Jr and **S. Schmauder**	625	Damage evolution and heterogeneity of materials: model based on fuzzy set theory
C. Thaulow, Ø. Ranestad, M. Hauge, Z. Zhang, M. Toyoda and **F. Minami**	637	FE calculations of stress fields from cracks located at the fusion line of weldments
Z. L. Zhang, C. Thaulow and **M. Hauge**	653	Effects of crack size and weld metal mismatch on the HAZ cleavage toughness of wide plates
J. Niu and **M. S. Wu**	665	Strong interactions of morphologically complex cracks
Bo Wang and **Keh-chih Hwang**	689	An engineering approach to safety assessment for non-*J*-controlled crack growth
M. C. Cherry, S. Mall, B. Heinimann and **A. F. Grandt, Jr**	701	Residual strength of unstiffened aluminum panels with multiple site damage
		Technical Note
B. S. Kim and **A. W. Eberhardt**	715	First and second order stress extrapolation for Mode I and Mode II edge cracks
	721	Calendar
	I	Index to Volume 57